

\$8.23 a ton. Possibly he has 100 tons of his first-class ore on the dump, and he counts on getting a profit of over \$800 from the smelter.

But the smelter would not pay anything like \$19.73 for the ore. The smelters have an arbitrary system of their own for settling. The customary practice is to deduct 5 per cent from the gold and from the silver values for refining charges. They are, perhaps, justified in this, for the refinery sometimes pays the smelter only 95 per cent of the gold at \$20 an ounce and for the silver at the current market price.

It is in paying for copper that the smelter makes the biggest reduction. An old Cornish custom is to pay for no copper except the amount in excess of 1.3 per cent. If the ore does not assay more than 1.3 per cent the miner gets nothing at all for the copper. This custom was started when smelting was a primitive business, and a good deal of copper was lost in matteing. Nowadays metallurgy has been improved so that only about 3 per cent of 1 per cent of copper is lost. Nevertheless they usually charge their old toll of 1.3 per cent. In addition to this they only pay 10 cents a pound instead of 16½ cents, the market price. The deduction is alleged to cover the refining charges.

The assay value of ore carrying 4 per cent copper is \$13.20. The smelter, however, deducts 1.3 per cent, leaving 2.7 per cent, or 54 pounds, for which it pays 10 cents a pound or \$5.40.

The smelter payment, therefore, is about like this:

Gold at \$20 per oz., less 5 per cent.....	\$3.03
Silver, 4 oz., at 58½¢ per oz., less 5 per cent.....	2.28
Copper, 4 per cent, less 1.3 per cent, 54 pounds at 10¢ per pound .....	5.30

Total.....\$11.48

Out of this must come smelter charges, \$6 per ton, wagon haul, \$4, and railway freights, \$1.50 per ton, making a total of \$11.50. As the smelter only paid at the rate of \$11.48 per ton, there is a net loss of 2 cents per ton.

Instead of making a profit of over \$800 on his shipment, therefore, the mine owner has suffered a loss of \$2, and that does not include the cost of mining.

These deductions made by the smelters are a never ending source of bitterness between smelter and mining men. On their face they appear to be almost a holdup. In

deducting 1.3 per cent from the copper assays the smelter makes a clear profit of about \$2.50 a ton. The deduction of 5 per cent from the gold and the silver is a profit that varies with the richness of the ore. In some cases these deductions alone are enough to pay big profits for the smelter with a corresponding loss of dividends for the mine. Smelter men defend the tolls with the plea that if they did not get the tolls they would have to raise their smelting rates. It all amounts to the same thing in the end, they say.

This system of payment is practiced almost everywhere over the country. There is one conspicuous exception. That is the smelter at Trail, B. C. The low grade ores of that camp seldom carry much more than 1.3 copper. Therefore under the old system the mineral owner would get nothing for the metal. The War Eagle Center Star companies have made a contract with the Trail smelter for 300,000 tons of ore. The smelter does not deduct the usual 1.3 per cent, but pays for 70 per cent of the copper. It pays for it at the New York quotation, less 6½ cents. That contract is a peculiarly advantageous one.

In paying for the lead ore the smelter makes a deduction of 10 per cent from the assay value of the lead, and pays at the market price. There is the usual deduction of 5 per cent for silver and gold. Sometimes an ore carries both copper and lead. It is not practical to smelt both copper and lead from the same ore. One must be lost. Therefore it is usual to give up the metal which is the less valuable. This makes a still further complication.

The smelting charge is usually based on what are called neutral ores—an ore in which the percentage of iron and silica is about equal. If the iron is in excess of the silica the smelter often pays 10 cents for each per cent of excess.—Metal Miner.

The Santa Fe railroad company is about to convert the locomotives between Needles and Seligman into oil burners. Tuesday a locomotive and crew were sent over the division to locate oil stations, and the big tanks will be put in as soon as possible after the report is in. The use of oil on the desert gives added comfort to the people who travel, as it will enable them to keep the car windows open without getting covered with cinders and grit. The company will also sprinkle the roadbed with oil and keep down the fine dust that makes travel wearisome to the tourist.—Journal-Democrat.

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